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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,721	03/18/2004	Shuichi Yamashita	01-581	5038
23400	7590	10/27/2005	EXAMINER	
POSZ LAW GROUP, PLC 12040 SOUTH LAKES DRIVE SUITE 101 RESTON, VA 20191			VINH, LAN	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/802,721	<b>Applicant(s)</b> YAMASHITA, SHUICHI	
	<b>Examiner</b> Lan Vinh	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/18/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Imai et al (US 5,677,204)

Imai discloses a method for evaluation a thin film. The method comprises the steps of:

immersing a silicon substrate, which is the semiconductor substrate, in an etching solution of potassium hydroxide solution (col 4, lines 21-30)

anodizing a main surface of the silicon substrate, which is immersed in the potassium hydroxide solution, by applying an electrical potential to the silicon substrate while the silicon substrate is used as an anode, so that a passivation film 10/ oxide film is formed in the main surface of the silicon substrate (col 5, lines 5-10; col 10, lines 24-30)

etching a main surface side of the silicon substrate in the potassium hydroxide solution (col 4, lines 55-60)

Regarding claim 3, Imai discloses etching of the main surface side of the silicon substrate while applying the electrical potential, which causes formation of the oxide film to the silicon substrate (col 4, lines 41-58; fig. 9)

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3. Claims 1-3, 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakai et al (US 5,949,118)

Sakai discloses a method for etching silicon substrate. The method comprises the steps of:

immersing a silicon substrate having a (110) surface in an etching solution of potassium hydroxide solution (col 4, lines 15-45)

anodizing a main surface of the silicon substrate, which is immersed in the potassium hydroxide solution, by applying an electrical potential to the silicon substrate while the silicon substrate is used as an electrode/anode, so that an oxide film is formed in the main surface of the silicon substrate (col 6, lines 3-10; fig. 1)

etching a main surface side of the silicon substrate in the potassium hydroxide solution (col 6, lines 9-15)

Regarding claims 2-3, Sakai discloses etching of the main surface side of the silicon substrate while applying the electrical potential and without applying the electrical potential (col 7, lines 25-38)

The limitation of claim 5 has been discussed above

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al (US 5,677,204) in view of Sakai et al (US 5,949,118)

Imai method has been described above. Unlike the instant claimed invention as per claim 2, Imai fails to specifically disclose etching the main surface side of the silicon substrate includes etching of the main surface side of the silicon substrate without applying the electrical potential to the silicon substrate upon initiation of the etching of the main surface side of the silicon substrate

Sakai discloses an etching method comprises the step of etching the main surface side of the silicon substrate without applying the electrical potential to the silicon substrate (col 7, lines 26-34)

Hence, one skilled in the art at the time the invention was made would have found it obvious to modify Imai method by etching the main surface side of the silicon substrate without applying the electrical potential to the silicon substrate as per Sakai because Sakai discloses that when no voltage is applied, the convex parts having the anodic oxide film thereon which is etched faster is selectively etched by the KOH solution (col 8, lines 64-66)

Unlike the instant claimed invention as per claim 5, Imai fails to disclose that the main surface of the silicon substrate has a (110) surface

Sakai also discloses etching the main surface of the silicon substrate having a (110) surface (col 7, lines 24-25)

Since Imai discloses using an etching solution of KOH, one skilled in the art at the time the invention was made would have found it obvious to have employed Imai etching

solution to etch the main surface of the silicon substrate having a (110) surface in view of Sakai teaching because Sakai discloses that the KOH solution can be used to electrochemical etching to the (110)-oriented silicon wafer (col 7, lines 24-26)

***Allowable Subject Matter***

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'LV' followed by a stylized flourish.

LV  
October 25, 2005